

PASCAL® Firmware Release 4.0

Introduction

As of December 1, 2006, new PASCAL Tonometers are being shipped with upgraded firmware. Release 4.0 incorporates some useful enhanced capabilities, while an effort has been made to keep standard tonometer operations essentially unchanged relative to previous release 3.x firmware. This preliminary document describes the new features. For all standard operations, please refer to the PASCAL User Manual, version 2.1, which remains valid in all essential aspects unless specifically mentioned in the present document.

The attached Firmware Block Diagram substitutes the previous diagram in Figure 16 (page 28) of the vers. 2.1 User Manual.

Changes

Tonometer Start-up:

PASCAL now starts more promptly after activating it with a click on the Blue Knob. Particularly, re-starting data acquisition while the unit is still active is now instantaneous.

Sound volume:

New PASCAL systems, starting with serial number 061140300 (S2 systems) or 061130330 (S1 systems) incorporate a beefed-up loudspeaker. Setting the speaker volume to 7 will now produce a sound that will be easily audible even in a noisy environment. If too loud, set the volume to a lower figure as described in the Manual (section 5.2.1).

User Settings:

The User Settings Menu (activated with a Long Click) has been reorganized and contains several new features. For an overview, see the attached Block Diagram. Several menu items requiring activated wireless hardware, will only be functional in wireless systems. Less frequently used functions (e.g. volume, contrast, and language settings) have been moved to the end of the menu.

Special Modes:

All system test and special measuring modes (performance test, cantilever test, and manometer mode) have been grouped under the "Special Modes" menu item. A new mode "Low OPA" has been added and will be discussed in the "new features" section below.

New Features

Q Indicator

PASCAL now monitors the quality of an incoming signal in real time while the user is taking data. As soon as sufficient data have been accumulated to ensure a result with adequate quality can be computed, the system will emit an audible signal. At that time the user can pull the tonometer off the patient's eye, performing an Interrupt Maneuver as discussed in section 1.3 of the User Manual. In the User Settings menu, click forward to the "Q Indicator" menu item, then go to the desired Quality level (1,2,3,4), or set to "inactive" and allow the PASCAL to power off.

Example: If the Q Indicator is set to 3, and if you collect data until the special alert signal sounds, you will obtain an IOP/OPA reading with Quality rating of 3 or better. (For a discussion of the Quality rating, see User Manual section 8.2).

The factory setting of the Q Indicator is "inactive"; i.e. the PASCAL will function as pre-4.0 units. The user decides how long to stay on the patient's eye to collect data. Remember: the longer the data stream, the higher the chance that the program will find good quality data and produce a highly reliable result. To get better results, increase the measurement time. We recommend a measurement time of five seconds for optimum results.

Transfer Limit

Some users with PASCAL systems connected to a printer or a PC, find it unnecessary and time-consuming to have all results transferring automatically to their external device. Setting the Transfer Limit will suppress printing or PC transfer of any results that are below a pre-set range of Quality scores.

Example: If the Transfer Limit is set to "Q = 1 - 3", then only measurements with a Quality of 3 or better will print. Data with a poor quality rating of 4 or 5 will not print. These measurements will however be retained in the Result List (numerical result only) for later viewing. *Caution: the raw data (Pressure curve) of any measurements suppressed with the Transfer Limit setting will be irretrievably lost.*

The factory setting for the Transfer Limit is "Transfer all" (i.e. no data transfers will be suppressed).

Low OPA Special Mode

In its normal operating mode, PASCAL requires the presence of a detectable OPA (approximately 0.5 mmHg or more). If no OPA is detected, an IOP cannot be computed. In special situations, you may need to measure IOP on eyes that exhibit no measurable OPA (e.g. eyes with gas or silicon oil tamponade, hypotonic eyes etc). In such situations, set your PASCAL to "Low OPA" Mode. This setting can be found in the "Special Modes" menu.

Caution: In "Low OPA" mode, the firmware is not checking for periodicity in the data and could therefore erroneously interpret bad data as acceptable, leading to an erroneous IOP reading. It is recommended to visually inspect pressure curves recorded in Low OPA mode, using the optional PASCAL printer or PASCAL DataWizard software, and to convince yourself that the data you have recorded are plausible.

Attachment on following page: PASCAL Firmware Release 4.0 Block Diagram

PASCAL® Firmware Release 4.0 Block Diagram

